



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/617,505	07/11/2003	Kenji Mukai	52478-0517	4004

21611 7590 12/01/2005

SNELL & WILMER LLP  
600 ANTON BOULEVARD  
SUITE 1400  
COSTA MESA, CA 92626

EXAMINER

YAMNITZKY, MARIE ROSE

ART UNIT PAPER NUMBER

1774

DATE MAILED: 12/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/617,505

Applicant(s)

MUKAI ET AL.

Examiner

Marie R. Yamnitzky

Art Unit

1774

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 8-18, 23-35, 37 and 68-75 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 8-18, 23-35, 37 and 68-75 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date rec'd 11 Jul 2003, 09 Jan 2004 and 31 Oct 2005.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

1. Applicant's amendment received August 01, 2005 cancels claims 38-67 and 76-83.

Applicant's amendment received September 14, 2005 cancels claims 19-22 and 36.

Claims 8-18, 23-35, 37 and 68-75 are pending.

2. Applicant's election without traverse of species (a), a light source/luminaire having the characteristics recited in claims 8 and 68 and/or the characteristics recited in claims 23 and 72, and comprising  $\text{BaMgAl}_{10}\text{O}_{17}:\text{Eu}^{2+}, \text{Mn}^{2+}$ ,  $\text{LaPO}_4:\text{Ce}^{3+}, \text{Tb}^{3+}$  and  $\text{Y}_2\text{O}_3:\text{Eu}^{3+}$ , in the replies filed on August 01, 2005 and September 14, 2005, is acknowledged. Claims 8-18, 23-35, 37 and 68-75 read on the elected species.

3. Claims 8, 9, 23, 24, 34, 35, 37 and 68-75 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a light source/luminaire having the specified whiteness and visual clarity wherein the light source/luminaire comprises a phosphor layer containing a combination of phosphors providing peak emission wavelengths in the ranges of 440-470nm, 505-530nm, 540-570nm and 600-620nm, and having bivalent europium, bivalent manganese, trivalent terbium and trivalent europium as emission centers, does not reasonably provide enablement for the claimed light sources and luminaires having the specified whiteness and visual clarity wherein the peak emission wavelengths of the light-emitting materials are unlimited and/or the light-emitting materials are not limited to a combination of phosphors having bivalent europium, bivalent manganese, trivalent terbium and trivalent europium as emission centers. The specification does not enable any person skilled in the art to which it

pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

There are numerous organic and inorganic light-emitting materials capable of being used to provide a light source/luminaire. Other than combinations of phosphors providing peak emission wavelengths in the ranges of 440-470nm, 505-530nm, 540-570nm and 600-620nm, and having bivalent europium, bivalent manganese, trivalent terbium and trivalent europium as emission centers, the specification provides insufficient guidance to enable one of ordinary skill in the art to determine, without undue experimentation, the scope of combinations of light-emitting materials capable of providing the whiteness and visual clarity specified in the present claims.

4. Claims 9-18, 24-35, 37, 69-71 and 73-75 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 9, 24, 69 and 73 set forth a relationship between radiant energy  $Q_v$  and radiant energy  $Q_g$ , and define each of these radiant energies as “in a wavelength of” followed by a range. It is not clear if each of  $Q_v$  and  $Q_g$  is the radiant energy of a single wavelength within the respective range, or the radiant energy of all wavelengths within the respective range.

Claims 10, 15, 25 and 30 set forth phosphors which must be present as “major components” of the phosphor layer. The limitations imposed by the term “major” are not clear.

Art Unit: 1774

It is not clear if the term “major” places any specific numerical limitations on the minimum weight percent, volume percent or mole percent of the specified phosphors in the layer.

For the third phosphor set forth in claims 11, 26, 34 and 35, it is not clear if the host crystals must comprise each of Ba, Ca, Sr and Mg, or at least one of Ba, Ca, Sr or Mg. Similarly, it is not clear if the host crystals of the third phosphor set forth in claims 12 and 27 must comprise both Mg and Zn, or at least one of Mg or Zn.

Claim 34, with claim 35 dependent therefrom: There is no antecedent basis for “the phosphor containing the bivalent europium” as dependent from claim 24.

Claim 37: There is no antecedent basis for “the phosphor containing the trivalent europium” as dependent from claim 34.

Proper antecedent basis is lacking for “the light source” as recited in claims 69-71 and 73-75. It is not clear if “the light source” refers to the claimed luminaire as a whole, or if “the light source” is only a component of the claimed luminaire.

Proper antecedent basis is lacking for “the light” as recited in claims 70, 71, 74 and 75.

There is no antecedent basis for “the translucent cover” as recited in claims 70 and 74.

There is no antecedent basis for “the reflector” as recited in claims 71 and 75.

The limitations imposed by the requirement set forth in claims 70 and 74 that light be adjusted to a “specified spectrum” after passing through a translucent cover, and the requirement set forth in claims 71 and 75 that light be adjusted to a “specified spectrum” after being reflected from a reflector are not clear. It is not clear what the “specified spectrum” is. Each of these

claims depends from a claim drawn to a luminaire that emits light of a whiteness no smaller than 85. It is not clear if the dependent claims' requirement for adjusting of the light to a "specified spectrum" requires adjusting to achieve the whiteness of at least 85.

5. Miscellaneous:

The formula for the second phosphor set forth in claim 12 contains an apparent error in that "O9" should read --O<sub>19</sub>--.

In the second phosphor formula set forth in claim 14, and the two phosphor formulae set forth in claim 33, "EU<sup>3+</sup>" should read --Eu<sup>3+</sup>--.

In the phosphor formula set forth in claim 16, "EU<sup>2+</sup>" should read --Eu<sup>2+</sup>--.

In the second phosphor formula set forth in claim 27, "O19" should read --O<sub>19</sub>--.

In the second phosphor formula set forth in claim 34, "O17" should read --O<sub>17</sub>--.

In line 4 of claim 73, "620nmi" should read --620nm;-- or --620nm,--.

As a grammatical correction, the examiner suggests inserting --being-- before "reflected" in claims 71 and 75.

6. Applicant is advised that should claim 34 be found allowable, claim 35 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

7. Claims 10-18 and 25-33 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

In view of the present specification, it is the examiner's understanding that a light source/luminaire emitting light whose whiteness is no smaller than 85 will necessarily have x,y CIE coordinates, using the 1931 CIE diagram, within the ellipse shown in present Fig. 5. The examiner notes that the x,y coordinates within this ellipse are a subset of x,y CIE coordinates for white light. It is also the examiner's understanding that x,y CIE coordinates correlate to color temperatures such as shown, for example, in Fig. 2 of US 5,714,836 to Hunt et al. and in Fig. 13 to Irie et al. If the examiner's understanding is incorrect in either regard, applicant is respectfully requested to clarify the record.

With the above understandings, the prior art does not disclose or suggest a light source as claimed in present claims 10-18 and 25-33. While the phosphors specified in present claims 10-18 and 25-33 were known in the art at the time of the invention, the prior art does not disclose or suggest a light source comprising a combination of these phosphors so as to provide light emission have a whiteness and visual clarity index as required by these claims. For example, EP 0 993 022 A1 discloses specific examples of light sources containing combinations of phosphors providing peak emission wavelengths in the ranges of 440-470nm, 505-530nm, 540-570nm and 600-620nm, and having bivalent europium, bivalent manganese, trivalent terbium and trivalent europium as emission centers, but does not disclose or suggest a light source emitting light of a whiteness no smaller than 85. EP '022 requires that the color temperature of the light source be

Art Unit: 1774

not more than 3700K, which is lower than would be provided by a light source emitting light of a whiteness no smaller than 85 according to the present proposed invention, as evidenced by Hunt et al. or Irie et al.

8. Any inquiry concerning this communication should be directed to Marie R. Yamnitzky at telephone number (571) 272-1531. The examiner works a flexible schedule but can generally be reached at this number from 6:30 a.m. to 4:00 p.m. Monday, Tuesday, Thursday and Friday, and every other Wednesday from 6:30 a.m. to 3:00 p.m.

The current fax number for all official faxes is (571) 273-8300. (Unofficial faxes to be sent directly to examiner Yamnitzky can be sent to (571) 273-1531.)

MRY  
November 28, 2005



**MARIE YAMNITZKY  
PRIMARY EXAMINER**

1774